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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,926	01/16/2002	Jeffrey R. Sampson	2003309-0027 (Agilent 10	1042

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AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
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Loveland, CO 80537-0599

EXAMINER

TUNG, JOYCE

ART UNIT PAPER NUMBER

1637

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/052,926

Applicant(s)

SAMPSON, JEFFREY R.

Examiner

Joyce Tung

Art Unit

1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 and 67-101 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 and 67-101 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

The applicant's response filed 5/31/2005 to the Office action mailed 1/25/2005 has been entered. Claims 1-35 and 67-101 are pending.

1. Applicant's arguments with respect to the rejections of claims 1-35 and 67-101 have been considered but are moot in view of the new ground(s) of rejection.

### **New Grounds of Rejections**

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-34, 67-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Kool (5,714,320, issued Feb. 3, 1998).

Baldarelli et al. disclose a method for sequencing nucleic acid polymer. The description of the method of Baldarelli et al. as listed in claims 1-24 (See Abstract and column 23-24, claims 1-24). Modified base are available including methylated bases (See column 8, lines 44-45). In order to identify the monomers, condition should be appropriate to avoid secondary structure in the polymer to be sequenced (See column 8, lines 53-54).

Baldarelli et al. do not disclose using a circular template, the nucleic acid molecule containing modified nucleotides, which are modified adenosine, modified thymine, modified guanosine and modified cytosine.

Kool et al. disclose a method for synthesis and amplification of DNA and RNA oligonucleotide which involves using circular oligonucleotide template and the nucleotide triphosphates is modified, 2-amino-adenosine-TP (See column 13, lines 50-67). The method uses enzymatic synthesis, which is polymerase enzyme (See column 5, lines 31-46). The teachings of Kool et al. suggest that the synthesized nucleic acid molecules contains modified nucleotides. The products generated from the method include a linear multimer having the desired sequence (See column 14, lines 29-38).

Although the modified nucleotide used in the method of Kool et al. is to make cleavage site (See column 30, lines 57-58), while in the instant invention, the modified nucleotide of the synthesized nucleic acid molecule is to reduce secondary structures in the synthesized nucleic acid, the elements used in the synthesis of nucleic acid are the same.

One of ordinary skill in the art at the time of the instant invention would have been motivated to apply the method of Kool et al. to enzymatically synthesize nucleic acid molecule for the sequencing method of Baldarelli et al. because the method of Kool is directed to efficient, low-cost and large-scale synthesis of linear and circular oligonucleotide (See column 1, lines 21-25). It would have prima facie obvious to provide a nucleic acid molecule with at least one repeat of a nucleotide sequence to be determined, wherein the nucleic acid molecule is enzymatically synthesized using a circular template and the nucleic acid molecule contains modified nucleotides.

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4. Claims 35 and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Kool (5,714,320, issued Feb. 3, 1998) as applied to claims 1-34, and 67-100 above, and further in view of Thorp et al. (5,871,918, issued Feb. 16, 1999).

The references of Baldarelli et al. and Kool set forth in section 3 above do not disclose analyzing nucleic acid by electron tunneling.

Thorp et al. disclose a method of detecting a nucleic acid by using electron tunneling (See column 9, lines 30-55). The method may be used in a variety of applications, including DNA sequencing (See the Abstract).

One of ordinary skill in the art would have been motivated to modify the method of Baldarelli et al. by applying electron tunneling as taught by Thorp et al. since the electron tunneling is applied to DNA sequencing. It would have been prima facie obvious to apply the electron tunneling to the method of Baldarelli et al. to make the instant invention for sequencing DNA.

### Summary

5. No claims are allowable.

6. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (703) 305-7112. The examiner can normally be reached on Monday-Friday from 8:00 AM-4:30 PM.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached at (703) 308-1119 on Monday-Friday from 10:00 AM-6:00 PM.

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Any inquiries of a general nature or relating to the status of this application should be directed to the Chemical/Matrix receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Art Unit 1637 via the PTO Fax Center located in Crystal Mall 1 using (703) 305-3014 or 308-4242. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Joyce Tung *J.T*

August 24, 2005

*Kenneth R. Horlick*  
KENNETH R. HORLICK, PH.D.  
PRIMARY EXAMINER  
8/25/05